

Chaco Culture
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Pueblo Bonito

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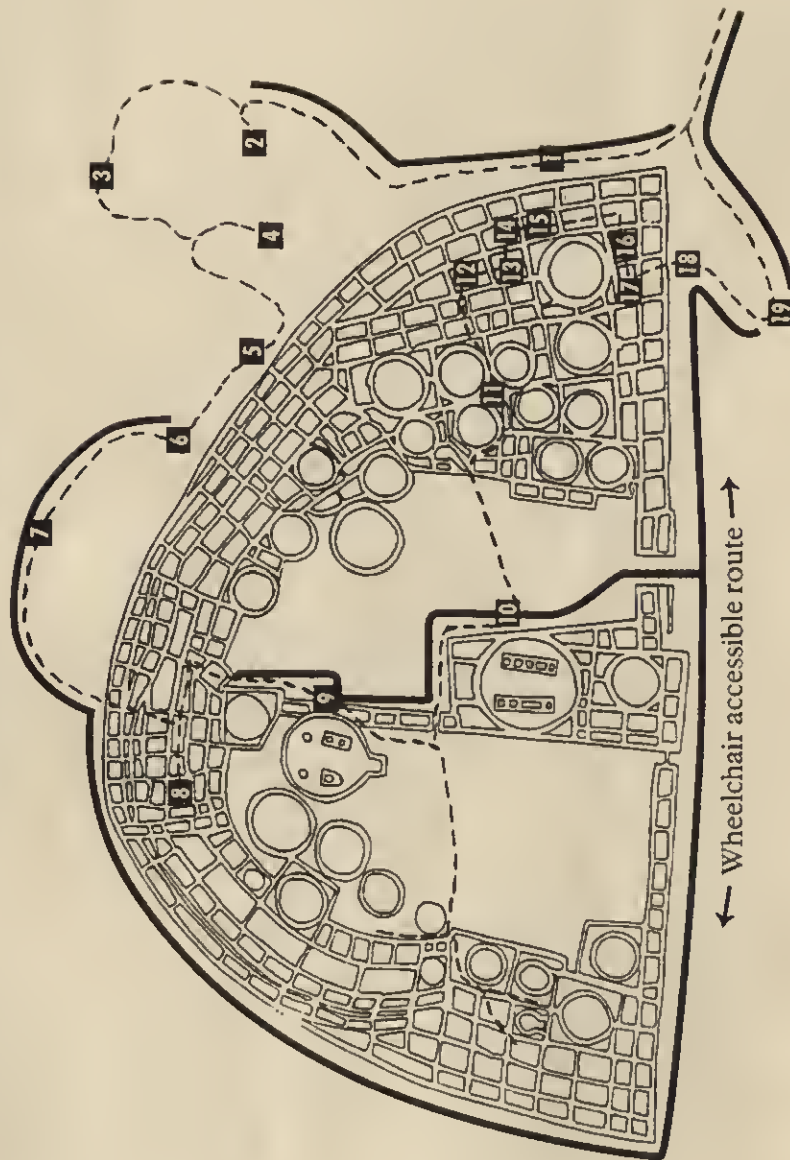
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PUEBLO BONITO

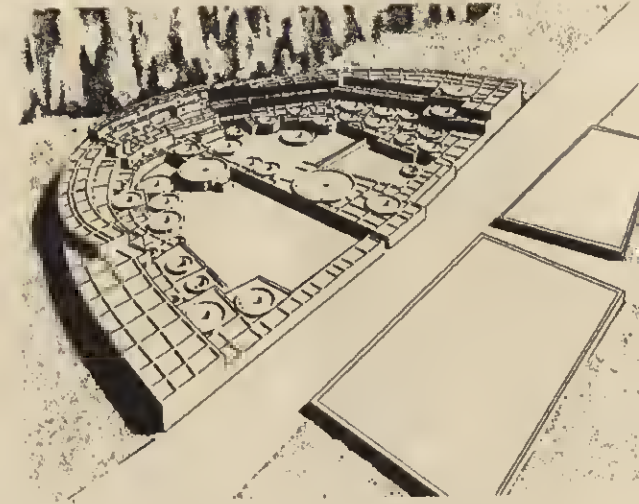


PLEASE STAY ON TRAIL AND OFF FRAGILE WALLS

19 Archeologists originally identified the rectangular earthen mounds that you pass as you leave Pueblo Bonito as refuse deposits (middens). Although they contained some trash, they are mostly composed of sand and construction debris. Researchers began to wonder if the mounds were planned architectural features. They are enclosed by masonry walls, raised about ten feet above the surrounding ground level, and the tops of the mounds were leveled and plastered, accessible by stairs. Some archeologists believe that the mounds were associated with Chacoan roads and great house landscaping. Similar mounds are found in association with roads and formalized entrances to other Chacoan great house, such as Pueblo Alto, Peñasco Blanco, and Kin Ya'a. A segment of Chacoan road connecting Pueblo Bonito to the great kiva of Casa Rinconada passed between the earthen mounds you see in front of Pueblo Bonito.

Please do not climb the mounds.

The Chacoan peoples created stunning architecture at Pueblo Bonito and throughout their world. Architecture is an important path to our understanding of the Chacoan



Hypothetical drawing of Pueblo Bonito courtesy of Ron Cox.

people—how they fit their lives into this environment, and how they impressed their identity upon the land. It helps to illuminate an important chapter in America's rich and diverse history.

The Chacoan peoples moved from the canyon in the A.D. 1100s, and thereafter ceased to build in the Chacoan style. However, their cultural legacy has been passed along to numerous and diverse American Indians who live in the region today. Many Southwest Indian peoples consider Chaco a sacred place where clans stopped along their migration paths—a place still alive—a place that speaks today of ancestry, survival, spirituality, and connections.

which originated at Chaco, are found throughout the ancestral Puebloan world, and deep into Mesoamerica. They are often restricted to special locations in buildings, facing plazas and balconies. T-shaped doors are frequently associated with kivas and great kivas. Researchers believe their form is symbolic rather than practical. T-shaped altars, wall niches, petroglyphs, and pictographs also exist.



Corner door

17 You can see original vigas and latillas in the well-preserved ceiling of this room. In 1991, wood samples were taken from these beams for tree-ring dating. The sampled areas are indicated by small, plugged holes, filled with numbered corks or sawed-off beams. A sampled beam indicates that the wood you see is from an original Chacoan beam.

The Chacoan builders cut and gathered an estimated 225,000 trees for the construction and repair of their great houses and great kivas in Chaco Canyon. They traveled to mountain forests, dozens of miles away on wood collecting expeditions. They cut trees, and then allowed them to dry, thereby reducing their weight. They carried the beams back to Chaco for construction. Before using them, they carefully trimmed and peeled them, cut the ends flush, and sanded the ends with stone tools.

18 If you turn around and look above and to the left of the rooms you have just exited, you will notice a southeast-facing corner doorway. This is an unusual type of door that was used in great house construction. Only seven are known in Pueblo Bonito, and all of them were built during later construction sequences in the eastern part of the pueblo. This particular doorway appears to function as an astronomical marker. When the sun rises on the morning of the winter solstice, rays of sunlight pass through the opening and strike the wall in the room behind it. Throughout the canyon, other architectural features, as well as modified landforms, correspond with astronomical events. Chacoan knowledge of astronomy seems to have been an integral part of construction plans at Chaco.

Welcome to Pueblo Bonito

To use this trail guide, follow the numbered stops, which correspond to the numbered items in the text.

The trail through Pueblo Bonito is 0.6 mile, roundtrip. It is graveled, and climbs several short, steep rises. The recommended wheelchair accessible route is to view Stop 1 and 2, then return to the south wall and enter the plaza at a break in the wall, just past stop 19.

During your visit today, use this guide to recognize several unique characteristics of Chacoan great house architecture and learn about the enduring legacy of Chacoan culture.

The cultural sites of Chaco Culture National Historical Park are fragile and irreplaceable, and form a significant part of our cultural heritage. They are part of the history and traditions of the Hopi, the Pueblo peoples of New Mexico, and the Navajo, who continue to respect and honor them.

In 1987, the park received international recognition for its cultural resources through designation as a World Heritage Site. You can help protect and preserve this significant part of our global cultural heritage by following these basic rules:

Do not collect pottery or other protected artifacts, plants, or rocks anywhere in the park. Do not walk, climb, sit, or lean on fragile walls. Stay on designated trails. Do not deface, add to, or alter the petroglyphs, pictographs, and rocks. Do not climb canyon walls. Children should remain with parents or guardians. Pets are not permitted into sites. Watch for drop-offs into open kivas.

If we all take responsibility for these sites, they will be here for the education and enjoyment of those who come after us.

This is a sacred area. Enter with respect.

Lt. James Simpson and his Mexican guide Carravahal gave Pueblo Bonito (Spanish for "Beautiful Town") its name in 1849, during a military expedition into Navajo territory. The site also has Pueblo, Hopi, and Navajo place names.

For the Hopi and the Pueblo peoples of New Mexico, Pueblo Bonito is an important part of their ancestral homeland—a special place where clans stopped and lived during their sacred migrations. Descendants continue to return to pray and honor the spirits of their ancestors.

In traditional Navajo stories, Chaco Canyon is the home of the Great Gambler, who came from the south, enslaved the Pueblo people, and forced them to create the great buildings of Chaco, before he was outwitted and driven away.

Pueblo Bonito is the most thoroughly investigated and celebrated cultural site in Chaco Canyon. Planned and constructed in stages between A.D. 850 to 1150 by ancestral Puebloan peoples, this was the center of the Chacoan world. That world eventually covered a vast area of the present-day Southwest, including the San Juan Basin of New Mexico, and portions of Colorado, Utah, and Arizona. For more than 300 years, Chacoan culture united many diverse peoples within its sphere of influence.

Pueblo Bonito typifies the great pueblo architecture found throughout the Chacoan world. Archeologists use the term "great house" to describe large sites like Pueblo Bonito. Great houses share many architectural features: planned layouts, multi-storied construction, distinctive masonry, very large

walls do not interconnect at the corners, but instead are flush with each other. Abutted walls were constructed at different times, while walls with corners were typically built at the same time.

15 Who were the people that built these monumental great house structures?

Archeology and architecture give us some insights into Chacoan society. For instance, a few burials were discovered here at Pueblo Bonito that contained large quantities of worked shell, turquoise pendants and beads, conch-shell trumpets, painted flutes, and other specialized items—perhaps representing individuals of higher rank and status, and class differences (a stratified society) in Chacoan social organization.

While monumental public buildings such as Pueblo Bonito and Chetro Ketl were in use, smaller, more typical villages alongside them were also in use. This association suggests that different groups of people may have lived side by side—perhaps speaking many different languages.

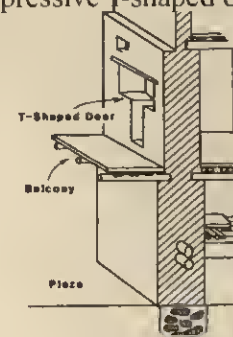
Who—and where—are the descendants of Chacoan people today? Although they share an agricultural lifestyle and certain other characteristics, Pueblo Indian peoples of today are not a single culture. Rather, they represent diverse clans, cultures, and languages. Their ancestors came

from many different geographic areas. Oral history traditions within the Hopi, Zuni, Acoma, Laguna, Zia, and other Rio Grande Pueblos, passed down through generations, speak of clan migrations from Chaco and affirm their ties to this special area. Puebloans continue to return to Chaco to pray and honor the spirits of their ancestors.

Navajo oral traditions trace the origins of several of their clans and ceremonies back to the time when ancestral Navajo people interacted with ancestral Puebloans at Chaco Canyon and other sites—cultural interactions that included conflict and competition, intermarriage, and the exchange of ceremonial knowledge.

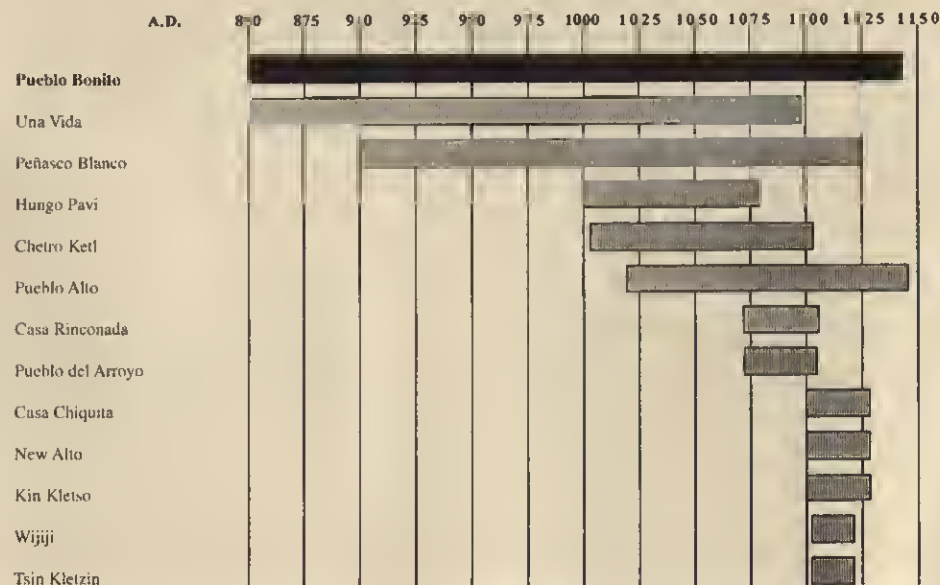
16 There are at least four principal door types used in Chacoan architecture: small doors with high sills, large doors with low sills, uncommon corner doorways, and T-shaped doors.

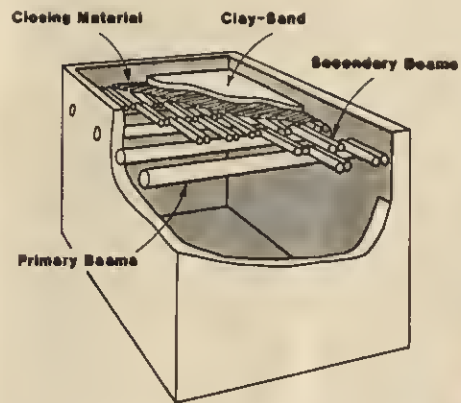
The impressive T-shaped doors,



T-shaped doorway

Construction Dates for Chacoan Sites





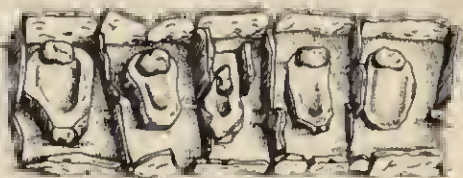
Flat roof

Before leaving this room, notice the masonry-filled doorways. The people of Chaco Canyon, and throughout the Chacoan world—commonly remodeled great houses by closing or sealing off doorways—perhaps to change a room’s function from domestic to storage, or to change the access.

13 The function of prehistoric rooms is often difficult to determine. Architectural features found during excavation are one way to determine room function. Sandstone slabs used to grind corn (*metates*), mealing bins, and firepits are indicators of a room’s function. Artifacts found where they were originally left are other clues to a room’s use.

It is unlikely that the large rooms in this section of Pueblo Bonito functioned as domestic dwellings. More likely, they were used for storage because they lack features such as fire pits. They were set so

deep in the interior of the room block that they would have been difficult to heat: ventilation would have been inadequate and the rooms would have been dark. Domestic rooms may have been placed on the upper floors, which subsequently collapsed, and cannot be identified today.



Mealing bins

14 The east and west wings of Pueblo Bonito were constructed between A.D. 1075 and 1115, including this room. This was the most extensive building phase in the canyon and one of the last.

During the 1920s, astronomer A. E. Douglas pioneered tree-ring dating (dendrochronology). For the first time, archaeologists could date the timbers used in construction—sometimes pinpointing the exact year or season.

As researchers studied the dated wood, the masonry styles that changed through time, and the floor plans of the buildings, they were able to identify several episodes of construction.

By studying the ways walls meet, or “abut,” researchers can identify construction sequences. Abutted

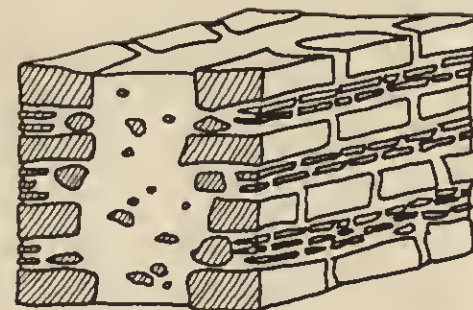
rooms, formal earthen architecture, and huge subterranean ceremonial chambers called “great kivas.” You can see all of these great house elements along this trail.

Researchers now believe that great houses were impressive examples of “public architecture.” They may have been used only periodically, when ceremonies, commerce, and trading drew people from other areas to Chaco Canyon.

Great houses were often oriented to solar, lunar, and cardinal directions and were surrounded by sophisticated astronomical markers, communication features, water control devices, formal earthen architecture, and Chacoan “roads.” The landscape surrounding them contained sacred mountains, mesas, and shrines that still hold deep spiritual meaning for American Indians.

1 Core-and-veneer walls are a distinguishing feature of Chacoan great-house construction. The core consists of roughly shaped pieces of sandstone laid in a mud mortar. The core is then faced on both sides with carefully selected and shaped stones to create the veneer. Several types of veneers were used (you are looking at one now), and styles changed over time. Today, archaeologists use these pattern variations as a tool for dating site construction.

After the Chacoans built walls and roofed rooms, they applied a plaster



Core-and-veneer

coating over most of the walls, which concealed this fine stonework. This protected the mud mortar from rain and decreased maintenance. It was easier to reapply mud plaster than to repair the mortar joints of the walls. The look of the structure would have been very different from the one we see today.

As you walk up the trail to the next stop, look for several mounds on your right. The largest mound is an unexcavated great house.

During excavations in the 1920s, archaeologists discovered an extensive network of room foundations in the open, vacant-looking landscape between the southeastern corner of Pueblo Bonito and Chetro Ketl. Recent non-destructive archaeological studies (subsurface imaging) of this area have revealed even more foundations, as well as rooms and kivas. The Chacoans may have designed these features to expand Pueblo Bonito and link it to the Chetro Ketl complex.

2 These enormous blocks of sandstone are all that remain of Threatening Rock, which collapsed in 1941 following a year of especially heavy rains. The rock-fall destroyed about thirty rooms that had been excavated in the 1920s. Prior to its collapse, the rock was a detached segment of the cliff wall, separated from the cliff by a wide crack. The rock measured about 97 feet high, 140 feet long, and 34 feet thick, and weighed an estimated 30,000 tons. To get an idea of the appearance of Threatening Rock before it fell, look to the east along the canyon wall at the massive (although only about a quarter as large) rock near Chetro Keti.

Chacoan builders chose this location even though they recognized the threat of a fall. They placed prayer sticks (*pahos*) in the crevice between the rock and the cliff. To counteract the threat of collapse and slow soil erosion beneath the rock, they built a masonry terrace below its base (look for its remains to your right). The traditional Navajo name for Pueblo Bonito is *Tsé biyah-nii'a'ah*, which means "rock that braces and supports the structure from below," and refers to the masonry construction that supports Threatening Rock.

3 The towering canyon cliffs provided the Chacoans with ample building stone, which they quarried to construct the impressive great houses. Dense

dark-brown sandstone was the preferred building stone during early construction. Found in thin outcropping layers on the tops of nearby cliffs, it is hard and readily breaks at right angles. This stone provided the builders with small mosaic-like pieces that could be easily shaped and incorporated into the veneers of the walls. So much of this rock was removed and used in Chacoan construction that little remains in original locations today. A soft, blocky, light-tan sandstone taken from the lower canyon walls was used in latter Chacoan constructions. It was used in the McElmo style masonry at Kin Kletso, Casa Chiquita, New Alto, and other late Chacoan sites.

4 From here, you can see the massive scale and geometric design of Pueblo Bonito. As was the case with most other great houses in the canyon, its layout was the result of several planned building stages and not a single construction event.

Construction of Pueblo Bonito began midway through the A.D. 800s. For 300 years, succeeding generations continued to carry out great house plans, designs, and construction. Building ceased late in the A.D. 1100s, but pottery sherds indicate that the site was used into the A.D. 1200s.

Early archaeologists assumed that buildings like Pueblo Bonito and the other great houses were essen-

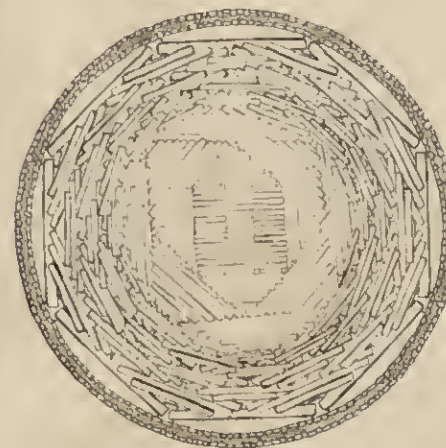
system; a fireplace; a low masonry bench encircling the base of the room; and masonry boxes (pilasters) built on the benches to support the roof. The Chacoans had set a small piece of log inside of, but not extending beyond, the masonry boxes—perhaps to cushion the weight of the massive log and earthen roof.

The Chacoans placed logs from one pilaster to the next and continued the process, thereby creating a stacked log or domed structure (cribbed roof) that covered the kiva interiors. Then they leveled the top with juniper bark, rock, and dirt. A central hatchway left in the center

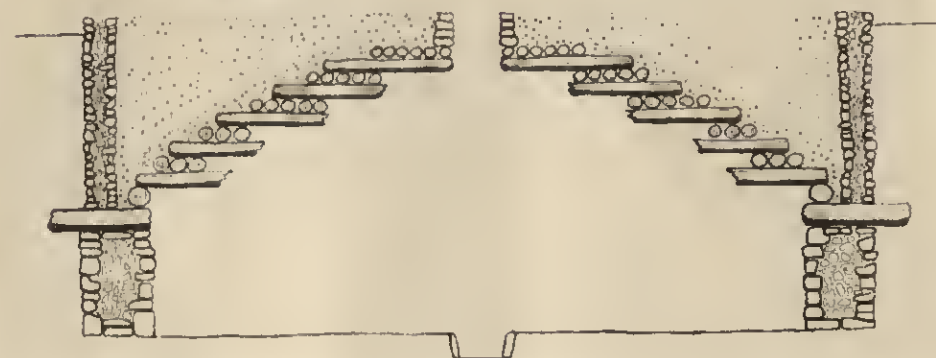
of the flat roof vented smoke, and enabled the people to enter and exit the kiva.

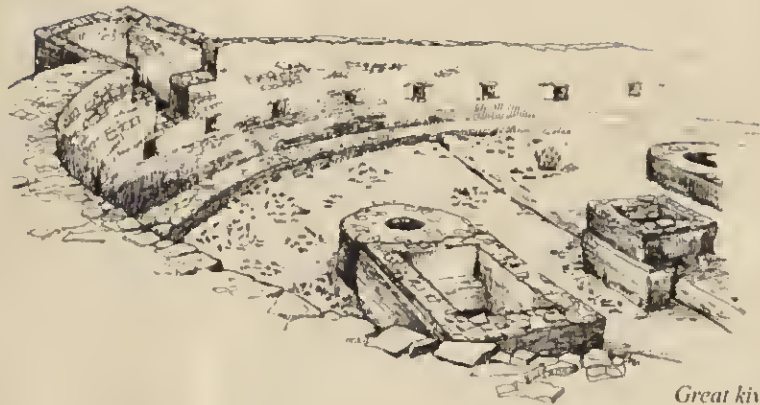
12 In this room, you can see the remnants of original plaster, as well as primary and secondary roofing beams. The primary beams (*vigas*) carry the weight of the roof. The secondary support beams (*latillas*) were laid perpendicular to the primary beams. Willows, juniper splints, and other plants (closing materials) were then placed on top of the *latillas*. A thick layer of mud mortar completed the roof, which could also serve as the floor of the room above.

The room's size—with large floor space and tall ceilings—is typical of Chacoan architecture. Rooms at Chaco were far larger than those built by contemporary neighboring groups. The present surface is raised off the actual floor level because it was re-covered with sand to protect and preserve fragile features (backfilling).



Kiva with cribbed roof





Great kiva features

and 1200. Great kivas are often located within the plazas of great houses—or nearby. Some are located along roads and on prominent ridges and hills. Others, like Casa Rinconada (across the canyon), were central to communities.

The unique design, size, and central position of great kivas suggest a ceremonial purpose—public gathering places for communities and the region. Great kivas—like modern kivas—would have accommodated hundreds of people.

Great kivas contain highly standardized architectural features: a low masonry bench around the base of the room; raised floor vaults; a raised firebox and deflector; pits for seating four upright wooden posts (or masonry pillars) used to support the roof; and an antechamber and entryway at the plaza level.

An additional feature frequently found in Chacoan great kivas is a set of wall niches. These may have functioned as repositories for

offerings and sacred objects, or as open shelves for the display of these objects.

There were four great kivas in the plaza of Pueblo Bonito, although all were not used at the same time.

Stops 11-18 require climbing 7 stairs, descending 14 stairs, and stooping through 11 narrow doorways 20-27" wide and 41-46" tall. Mobility-challenged individuals may want to exit the plaza and proceed to Stop 19.

11 From 1921 through 1927, Neil Judd excavated Pueblo Bonito for the Smithsonian Institution and the National Geographic Society. He identified features in Chacoan kivas (called “housed kivas” and “clan kivas”) that distinguish them from kivas found in other ancestral Puebloan settlements.

Chacoan kivas are enclosed within square rooms, and contain: a sub-floor vault; a sub-floor ventilation

tially large farming villages similar to historic and modern Indian pueblos. Most researchers now believe that the great houses were mostly used on a seasonal basis to accommodate temporary influxes of people visiting the canyon for ceremonies, trading, and other special events.

Today, researchers estimate year-round population for Pueblo Bonito at around 50 to 100 people—and that for Chaco Canyon as a whole at around 2,000 to 6,000. They base their estimates on the number of habitation rooms (with firepits) and the quantity of pottery vessels—as well as on the amount of arable land nearby.

5 The Chacoans constructed the great houses far more substantially than the structures built by non-Chacoan neighbors. Substantial walls were necessary for multi-storied design.

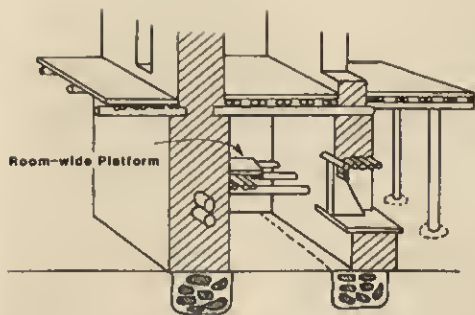
This broken cross section of wall displays its massiveness, and how well it was designed. The Chacoans built very wide walls in the first story to create a strong and stable base upon which to build additional stories. The decrease in wall width in each additional story lightened the load of the upper stories on the massive base. Decreasing wall widths also demonstrated that the second and third stories were planned before the first story was built. You are looking at a room on the second story.

This exterior rear wall was added onto the building during the second construction episode at Pueblo Bonito, from approximately A.D. 1040 to 1050. The builders constructed this new rear wall onto the structure. This wall ran parallel to the existing wall, and was eventually tied into the old wall. The addition of the back wall widened the arching configuration of the building plan, and expanded the size of the great house.

6 In the late 1800s—before the advent of the first archaeological protection laws—travelers, vandals, and pothunters repeatedly knocked massive holes into the back wall of Pueblo Bonito, removing the contents of the rooms this way, rather than digging into the rooms from above through many feet of windblown sand. Information about the contents of the room and its use was forever lost.

The rooms along this back wall are unique. When the Chacoans added the expanded back wall in the late 1000s, a new series of interconnected rooms was created in between the old and new exterior walls. These rooms had doors that only opened to the back—there was no access into interior rooms or plaza areas.

When these rooms were excavated, many of them contained platforms across the width of the rooms. These room-wide platforms were located midway between the floor



Room-wide platform

and ceiling. They may have been used as shelving to increase the storage capacity of the rooms. Some researchers suggest that the platforms—and the restricted access to the rooms—may indicate use as sleeping areas for Chaco's visitors.

7 The doorways to your right lead into rooms that were used during the first sanctioned excavations of Pueblo Bonito. Richard Wetherill, a rancher from the Mesa Verde area of Colorado, spent much of his life exploring the region and excavating antiquities for sale to museums and collectors.

Richard Wetherill came to Pueblo Bonito in 1896. He soon married, settled in the area, and assisted project leader George Pepper with the first excavations of Pueblo Bonito, under the auspices of the American Museum of Natural History in New York. The two eventually excavated 190 rooms in four work seasons. They located, photographed, and mapped all of the major structures in the canyon.

In addition, they recorded Chacoan roads, stairways, dams, ditches, and headgates.

Wetherill's excavations and photo-documentation are now considered equal to—or better than—those of more highly trained and sanctioned archeologists of his day. However, outcry from archeologists and universities led the government to shut down his "vandalizing" activities at Chaco, and led to the creation of our nation's first law protecting antiquities.

After Pepper and Wetherill completed their excavation in 1899, Wetherill remained in the canyon, homesteading and operating a trading post at Pueblo Bonito until his controversial murder in 1910. He is buried in the small cemetery west of here.

8 This is the oldest section of Pueblo Bonito, dating from A.D. 850 to the late 900s. This early construction consisted of approximately 100 ground-floor and upper-story rooms. Three to five round, subterranean ceremonial rooms (kivas) were built in front of the crescent-shaped block of rooms. As with most other great houses, this early section was incorporated into subsequent stages of construction. Succeeding generations maintained the form and geometry of the building that started with this modest block of rooms.

Several different masonry styles can be seen in this section, including the earliest type used in great house construction. This early masonry style used thin, rectangular-shaped pieces of sandstone laid down with copious amounts of mortar. It required more repairs and maintenance than later styles.

9 You are now entering the two major plazas of Pueblo Bonito. These open areas are well defined by the multi-storied roomblocks that flank them on the north, east, and west. A central wall, aligned along a north-south axis, divides the interior space of Pueblo Bonito into eastern and western plazas.

Plazas are important areas at modern pueblos, where many activities take place—public ceremonies, trading, community gatherings, and daily activities.

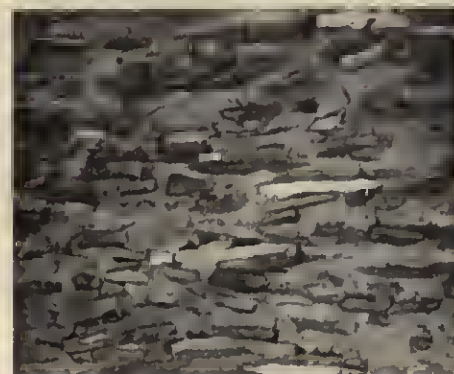
There was only one entryway into the interior of Pueblo Bonito and the plazas. The original entrance

was located in the western plaza, in the southeast corner. Originally seven feet wide, the entrance was later remodeled into a three-foot-wide door. Finally, even the small door was scaled—perhaps to "close" the site—when the people moved away.

During excavations in the 1920s, Neil Judd found the stump of a massive ponderosa pine tree near this entrance. Researchers believe that a living tree, perhaps having a calendrical or ceremonial function, once stood in the plaza of Pueblo Bonito.

10 The very large, round subterranean structure you see is called a great kiva. In modern Puebloan cultures, kivas are buildings used for religious worship, similar to churches, mosques, and synagogues.

Great kivas are a key element of Chacoan public architecture. They are found in nearly every Chacoan community built between A.D. 900



Early Chacoan masonry



Later Chacoan masonry